

WHAT IS CLAIMED IS:

1. An optical film:

comprising a surface in which a plurality of rows of convex or concave portions that are linearly continuous are adjacently formed in parallel with one another,

wherein ridges of the convex or concave portions of the rows are inclined at a predetermined angle with respect to an edge of the optical film.

2. The optical film of claim 1, wherein the convex or concave portions have a pyramidal shape.

3. A light reflective film comprising:

the optical film of claim 2; and

a reflection film which is grown on the optical film.

4. A liquid crystal display panel comprising:

a pair of substrates which are opposed to each other;

a liquid crystal sealed between the pair of substrates;

pixel electrodes which are formed on at least one of the pair of substrates; and

the light reflective film of claim 3,

wherein an edge of the light reflective film is placed in parallel with an edge of the substrate on which the pixel electrode are formed, and the ridges of the convex or concave

portions of a pyramidal shape are inclined at a predetermined angle with respect to an arrangement direction of the pixel electrodes.

5. The liquid crystal display panel of claim 4, wherein the light reflective film is placed between the pair of substrates.

6. An apparatus for producing an optical film, comprising:  
a cylindrical die roller having a matrix formed on a surface thereof in which a plurality of rows of concave portions or convex portions that are linearly continuous are adjacently formed in parallel with one another so as to be inclined at a predetermined angle with respect to a circumferential direction of the die roller,

wherein the die roller is rotated on a film to transfer a rough face of the matrix having the convex or concave portions which are linearly continuous, to a surface of the film.

7. An apparatus for producing an optical film, comprising:  
a cylindrical die roller having a matrix formed on a surface thereof in which a plurality of rows of concave portions or convex portions that are linearly continuous are adjacently formed in parallel with one another, so as to be inclined at a predetermined angle with respect to a circumferential direction of the cylindrical die roller; and

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means for transferring a rough face of a die film to a surface of another film, the rough face being produced by rotating the die roller on the die film and having convex portions or concave portions that are linearly continuous.

8. A method of producing an optical film, comprising the step of:

rotating on a film a cylindrical die roller having a matrix formed on a surface in which a plurality of rows of concave portions or convex portions that are linearly continuous, are adjacently formed in parallel with one another so as to be inclined at a predetermined angle with respect to a circumferential direction of the die roller, to transfer the plurality of rows of concave portions or convex portions to a surface of the film.

9. A method of producing an optical film, the method comprising the steps of:

rotating on a film a cylindrical die roller having a matrix in which the plurality of rows of convex portions or concave portions that are linearly continuous are adjacently formed in parallel with one another to be inclined at a predetermined angle with respect to a circumferential direction of the cylindrical die roller to transfer the plurality of rows of convex portions or concave portions to the film to prepare a die film having

a rough face having the plurality of rows of convex portions or concave portions; and

transferring the rough face of the die film to a surface of another film.

10. A method of producing a die roller, the method comprising the steps of:

placing a tip end of a cutting tool on a surface of a cylindrical roller which is rotated about a rotation axis, and reciprocating the cutting tool along an axis of the cutting tool to form a row of concave portions in the surface of the roller; and

at the same time moving the cutting tool in a direction parallel to the rotation axis of the roller with the roller rotating to form from the row of concave portions a row of concave portions which is inclined at a predetermined angle with respect to a circumferential direction of the die roller.

11. An apparatus for laminating an optical film on a substrate, the apparatus comprising:

means for supplying a stacked member consisting of an optical film and a die film having a rough face on which the optical film is stacked, on a substrate;

means for making the supplied stacked member in close contact with the substrate;

means for bonding together the stacked member and the substrate which are closely in contact with each other; and means for stripping the die film from the stacked member bonded to the substrate so as to obtain the substrate to which the optical film having a rough face is bonded.

12. A method of laminating an optical film to a substrate, the method comprising the steps of:

making a stacked member which consists of an optical film and a die film having a rough face on which the optical film is stacked and is fed onto a substrate, in close contact with the substrate;

bonding the stacked member and the substrate which are closely in contact with each other, together; and

stripping the die film from the stacked member which is bonded to the substrate, so as to obtain the substrate to which the optical film having a rough face is bonded.